Excavations at the Hungry Fox Archeological Site, Gates of the Arctic National Park and Preserve

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Figure 1. The excellent preservation conditions at the site are exemplified by this piece of split root cordage, and other delicate organic items such as wood shavings.

(Opposite page, clockwise from left)

Numerous ground slate tools such as this ulu were recovered from the site and are good archeological evidence for an Iñupiaq cultural affiliation.

View of the Hungry Fox site excavations in 2004.

Nearly a ton of fire cracked rock was excavated from Hungry Fox in 2004. These rocks were heated and used in cooking.

National Park Service photographs

by Jeff Rasic

Gates of the Arctic National Park, spanning the central portion of the Brooks Range in northern Alaska, is filled with remote river valleys that are hundreds of miles from the nearest city or highway, and where it is easy to imagine yourself as the first person to explore a side valley or climb a peak un-named on any map. Floating down one of these rivers in the early 1980s, a commercial river guide spotted a scatter of thousands of bleached animal bones strewn down a steep river bank. Even from a distance the patch of white would have seemed obvious and out-of-place to someone with a good eye, and it would have called for a closer look to anyone with an ounce of curiosity. The guide had both, and what he found were the remains of an important archeological site that would later be named Hungry Fox. What was to explain the presence of this apparently intensive occupation in this now uninhabited valley? How old was the site? Who lived here? What were they doing? When he reported the find to National Park Service (NPS) staff it began a two-decade effort to learn from the site, and to watch over it in the face of sporadic but relentless river erosion *(Spearman 1992, Devinney 2000, Sweeney 2000)*.

In 2004, NPS archeologists closed the last chapter on the site when they excavated its last remaining portion in response to a shift in the river's course that had begun rapidly eroding the bluff. The information that was rescued answered a number of questions that had been raised about the site over the years and yielded detailed information about fifteenth century Inupiat life in this portion of northern interior Alaska.

History of Investigation and Significance of the Hungry Fox Site

One of the things that made the Hungry Fox site interesting is the excellent preservation of organic materials like bone, antler, and even some wood. At most archeological sites in the region, bone and other organic materials have long ago decayed, and only stone tools and debris from their manufacture remain. While informative, the stone component of a site may compose less than 1% of all the artifacts and refuse that were once discarded, and as a result they provide only a limited picture of past activities. At Hungry Fox fragile bird and fish bones appeared as if they were from the previous summer rather than a previous century; an early visit to the site discovered a wood fishing float made of soft poplar wood; and later excavations uncovered split root cordage *(Figure 1)* and delicate, curved wood shavings left from making tool handles or a maybe a bow. Preservation like this stood to reveal a variety of insights about prehistoric diet, the seasons during which people made their residence, and the techniques they used to manufacture tools, process animals, and prepare food.

Another intriguing question raised at Hungry Fox concerned the cultural affiliation of its occupants. During a visit to the site in 1992, NPS Ranger Jon Peterson

(Clockwise from top left)

Figure 2. Example of a ceramic cooking pot fragment.

Figure 3. Close up of the cultural layer at Hungry Fox showing the dense layer of animal bone, charcoal, wood fragments, fire cracked rock and stone tool debris.

Figure 4. The bulk of material excavated from Hungry Fox consisted of animal bones, the food remains of the site's occupants.

Figure 5. Large stone slabs with roughly sharpened edges were tools used to smash bones to extract marrow and bone grease.

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Table 1. Animal Species Identified at Hungry Fox

Caribou	*Rangifer tarandus*
Sheep	*Ovis dalli*
Moose	*Alces alces*
Wolf or dog	*Canis* sp.
Willow ptarmigan	*Lagopus lagopus*
Raven	*Corvus corax*
Grayling	*Thymallus arcticus*
Arctic ground squirrel	*Spermophilus parryii*
Meadow vole	*Microtus pennsylvanicus*
Duck	*Anas* sp.

found a small, flaked-stone arrow point that archeologists refer to as the Kavik type *(Campbell 1968, Wilson 1978)*. Although the site was solidly within recent and centuries-old Nunamiut Eskimo territory, Kavik points were usually associated with Athapaskan archeological sites, known from areas much further to the east and south. Some researchers linked Kavik points to a specific Gwich'in Athapaskan group, the Di'haii *(Burch and Mishler 1995)*. The find was not entirely surprising since both Nunamiut and Gwich'in Athapaskan oral history recounted stories of a now-vanished Gwich'in tribe that had lived in the mountains of the central Brooks Range until a few centuries ago *(Burch and Mishler 1995, Hall 1969, Raboff 2001)*. The relationship between the Iñupiaq speaking Nunamiut, or Mountain Eskimo, and the Di'haii Gwich'in appears to have been complex, sometimes involving trade and cooperative hunting, other times a rotation of land use that maintained a healthy distance, and not infrequently, open hostility in the form of raiding and warfare. The find of a Kavik point at Hungry Fox hinted that the site might represent a Di'haii Gwich'in village from this dynamic era, or as some suggested, a Nunamiut encampment with evidence for trade or some other, less harmonious interaction with Gwich'in people. Whatever the explanation, few Kavik sites were known anywhere, and fewer still had been found this far west. So the site, if it was in fact Kavik, stood to provide information about this mysterious people *(Burch and Mishler 1995)*.

Careful not to remove the Kavik point from its position and risk losing its association with other artifacts or samples, Peterson photographed and sketched the point then left it in place so that it could be recorded precisely by an archeologist. Later that same summer, Grant Spearman, an archeologist and Nunamiut specialist from the Simon Paneak Museum in Anaktuvuk Pass, returned to the site for this purpose, but was unable to find the point. (It has never been relocated, presumably lost to the river or the pocket of a kayaker.) Spearman did, however, record important details about the site deposits *(1992)*, confirming the abundance of well preserved organic artifacts, and for the first time noting fragments of handmade clay pots *(Figure 2)*, and ground slate tools such as ulus. Such artifacts are commonly found in Iñupiaq sites from the last several hundred years, and their occurrence raised doubts about the simple explanation of Hungry Fox as a prehistoric Gwich'in or Kavik site. Spearman also collected a sample of charcoal that through radiocarbon dating established the age of the site at about 500 years ago, putting it solidly prior to European contact *(Table 2)*.

Archeologists and park rangers continued to make periodic site visits through the 1990s during the course of other projects in the area. The site remained stable, but enigmatic. The scattered nature of the eroded artifacts made it difficult to tell if the deposit accumulated over a long time from many episodes of use, or from fewer more intense occupations. Other pockets of artifacts were found along the bluff within a few hundred feet of the main concentration, and it was uncertain whether these artifacts represented portions of one large settlement or were from separate, unrelated occupations of the bluff. Researchers collected some artifacts and samples over the years, but these were small and dictated by whether they were in immediate danger of being lost to erosion, rather than their usefulness in studying some aspect of prehistoric life.

In 2000 a brief but systematic field effort defined the boundaries of the site by excavating a series of small test holes, and also set a permanent marker to measure the rate of erosion *(Sweeney 2000)*. The testing showed that the site did not extend much further inland, and that very little of the site deposits remained. Shortly afterwards, a gravel bar that shielded the Hungry Fox bluff from active river erosion shifted, and the current began to cut into base of the bluff and cause blocks of the intact site deposits to tumble into the river.

Excavations in 2004

A concentrated effort to rescue remaining information from Hungry Fox was conducted in July 2004. A team of Gates of the Arctic archeologists with the help of three volunteers spent two weeks working at the site. In all, 42 square meters were excavated, even though some of the excavating involved sweeping up slumped and out-of-context artifacts heaped at the base of the bluff. Despite this, a substantial portion of intact deposits were excavated in a controlled manner and yielded a large volume of samples and artifacts.

Once a broad exposure of the site was visible, it was clear that the artifacts occurred in a single, very dense layer that

Table 2. Radiocarbon Dates from the Hungry Fox Site

Lab Number	Measured C14 Age (BP)	Calibrated Calendar Age (AD)*	Comments
CAMS-114502	460±35	1423-1450	Worked (grooved and split) caribou antler collected in 2004
CAMS-114503	455±40	1419-1458	Worked (grooved, split and whittled) moose metatarsal collected in 2004
Beta-59590	530±80	1311-1445	Charcoal sample collected in 1992
Beta-59589	360±80	1453-1633	Charcoal sample collected in 1992
Beta-85825	420±60	1427-1618	Unidentified bone collected in 1992 or 1993

*IntCal 2004 calibration curve.

consisted almost entirely of refuse (e.g., bone, charcoal, heat fractured rock, stone tool debris) and lacked intervening lenses of naturally deposited sand *(Figure 3)*. This indicates that the site was never abandoned for long, if at all, and the deposit accumulated rather quickly, perhaps over the course of a few years. Excavations failed to uncover any remains of houses, fire hearths or storage pits. This fact, combined with the extremely dense accumulation of refuse, indicates that the site deposits are a midden, or trash dump. Middens typically occur at the periphery of a settlement and contain the detritus from occasional cleaning of house floors, and the bothersome debris from common areas. With such a small portion of the site preserved one can only guess at the size of the settlement, but the thick midden suggests it was at least of modest size, perhaps with housing for a few families.

Food Processing, Cooking and Diet

The bulk of material excavated from Hungry Fox consisted of animal bones, the food remains of the site's occupants *(Figure 4)*. Analysis of this large volume of material is ongoing, but an estimated 300,000 individual specimens were collected. Table 1 shows a fairly broad range of animals were used at Hungry Fox, including caribou, sheep, moose (a single specimen), fish (grayling and others), waterfowl (one or more duck species), birds (ptarmigan and raven), and small game (ground squirrel). Caribou bones are predominant and were presumably the mainstay of the diet.

The numerous bones in the midden might give the impression that game was plentiful, but animals were nonetheless used intensively. Many of the site's caribou bones have been purposely broken to obtain nutrient-rich marrow. We found several large stone slabs with sharpened edges *(Figure 5)*, and a handful of hammer stones, tools used to smash bones for this purpose. In addition, a large proportion of the bones were found as tiny, angular fragments that result from people pulverizing and then boiling them to obtain grease, a vital part of a diet based on lean, wild game. We also excavated nearly a ton (884 kg, 8000 pieces) of fire-charred and fragmented rock that was part of this process. These stones were heated in fires then placed directly in pots of liquid where they released heat for boiling.

The site contained a number of cooking pot fragments, which were thick, fairly soft, and lack decoration. They are not poorly made, but rather minimalist and utilitarian. Small feather imprints remain preserved in the fired clay and show that small, downy feathers were used for temper. Occasionally a potter's fingerprint is also frozen in time on the surface of a sherd.

Hungry Fox also contained a large number of ground slate ulus and ulu fragments. These tools were knives used by women primarily to slice meat and fish. They are one of the best indicators at Hungry Fox for the cultural affiliation of the site's occupants, since ulus and other ground slate tools are a hallmark of Iñupiaq Eskimo sites, yet are absent from Kavik sites.

Hunting

The animal bones at the site clearly indicate that hunting was an important activity conducted by people based at Hungry Fox, but there are surprisingly few tools directly indicative of hunting in the midden. Hunting tools that were found, however, include stone projectile points *(Figure 6)*, and antler arrow points *(Figure 7)*. Both are of a style typical of late prehistoric and historic period Iñupiaq sites and compare well with artifacts recovered from Iñupiaq sites on the Kobuk River, the vicinity of Barrow and across northern Alaska *(Ford 1959, Giddings 1952, Hall 1971, Murdoch 1892)*. We also recovered two examples of blunt antler arrowheads used to hunt birds and small game.

Figure 6. A stemmed arrow point made of chert, one of several excavated from the site. Length is 1.8 in (4.5 cm).

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Tool and Clothing Manufacture

A detailed study of the stone tool assemblage was completed for the artifacts excavated in 2004, which included 1,310 pieces of flaking debris, 69 flaked stone cores and tools, and 608 ground slate and jade tools. The analysis showed that people procured small nodules of a glassy stone called chert from nearby stream gravels, which was shaped to produce simple flake knives as well as nicely crafted arrow points. The analysis also indicates that people were very conservative with their use of chert raw materials, which is curious to see in the Brooks Range where there are abundant sources of high quality stone raw materials. Evidence for this stingy use of chert is seen in the use of a technique called bipolar reduction, in which small chert pebbles were placed on a stone anvil and smashed with a stone hammer. The technique allowed even the smallest pieces of stone to be used to make usable flakes for cutting and scraping tasks. This conservative use of chert may indicate that occupation of the site spanned the winter months, during which access to stream pebbles would have been limited by frozen ground and snow cover.

Eleven fragments of ground jade tools were found in the site and these were likely detached from adzes. Jade (or jadeite) comes from sources on the upper Kobuk River and is a typical element of late prehistoric Iñupiaq technology. Adzes made of this tough stone were used for woodworking. They were laborious to

produce and probably highly valued tools, so it is no surprise that only small fragments broken from bit ends are found in the Hungry Fox midden.

Ornamental and Other Items

Some of the more intriguing finds were a few bone and amber beads *(Figure 8)*, and a single teardrop-shaped slate pendant with a drilled hole *(Figure 12)*. Used as charms or amulets or to decorate clothing and tools, these small items were probably lost on house floors and inadvertently discarded during cleaning. The presence of amber suggests wide trade networks or wide ranging travels since the known sources of amber are confined to the Arctic coast near Barrow and places on the Kobuk River some 75-100 miles to the west.

A number of carved, incised or otherwise shaped pieces of bone and antler were collected *(Figure 9)*. Many of these consist of items that were either broken before they were completed, or broken in use but are too small to determine an exact function.

Summary

So far our studies have shown that a fairly substantial Iñupiaq settlement once existed in a place that today seems remote and unpopulated. Recently all that remained of the settlement was the trailing edge of its trash dump, but even that provided some rich information. Given the midden's contents the settlement probably once consisted of a few or maybe several houses, and was occupied for a considerable portion of the year. People ranged from the camp to pursue caribou, they climbed the nearby hills to track sheep, and fished in the

Figure 7. Antler arrow point fragments. The length of the artifact on the far left is 2.0 in (5.2 cm).

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Figure 8. A drilled bone bead from Hungry Fox. A few amber beads were also found.


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Figure 9. A number of carved, incised or otherwise shaped pieces of bone and antler were collected. This is a piece of grooved or incised bone with an unknown function.


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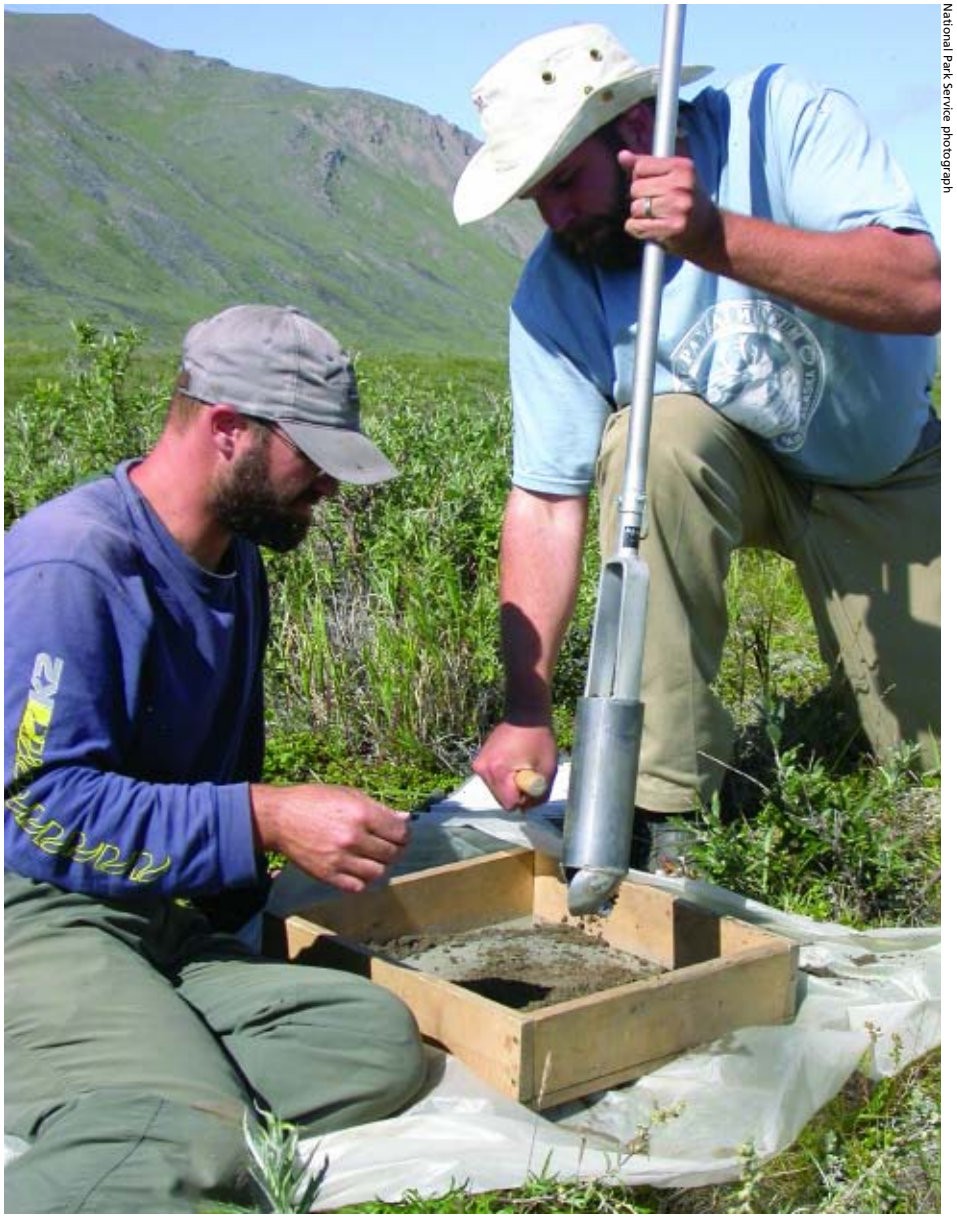
National Park Service photograph

Figure 11. Auger tests were used to determine the extent of the archeological deposits inland from the bluff edge.

(Left) Figure 10. View of the Hungry Fox site showing eroded artifacts at the base of the bluff and intact deposits held precariously together in blocks near the top of the bluff.

streams and lakes. They trapped ground squirrels and harvested waterfowl. Back in camp a intense effort was made to derive sustenance from these animals—meat was partitioned, parts likely shared between families, and bones were processed to capture every ounce of fat.

The idea that the Hungry Fox site represents a Di'haii Gwich'in or Kavik occupation can now be placed in a midden itself. Evidence points clearly to a single, relatively brief period of Iñupiaq Eskimo occupation. The original report of a Kavik point remains neither confirmed or disproved, but no other Kavik points or artifacts were found in subsequent studies. A possible explanation for the original Kavik point report is that the point was instead a damaged or repaired Iñupiaq stemmed point, which could appear similar to a stemmed Kavik point. Typical Iñupiaq traits at Hungry Fox include ground slate and jade tools, specific forms of antler and stone arrow points, pottery, and amber beads.

Large scale archeological excavations, particularly by land management agencies like the NPS, are rare since they consume a non-renewable resource. However, careful, judicious use of this tool has important benefits. Even if the Hungry Fox site had not been threatened, limited sampling of the site could just as well have been justified. William Lipe *(1996)*, a noted scholar on the topic of cultural resource management, makes a good point when he says that excavating only threatened sites "has the unintended effect of trivializing archeological research and its contributions." It suggests that the meandering of

a river or the widening of a road are better justifications for archeological work than is learning about the past, sharing this knowledge with the public, or inspiring students. Excavation is one of the smallest threats to archeological sites and when done right, the benefits are clear. Some modest benefits have already accrued from work at Hungry Fox, and ongoing studies and analyses will hopefully continue this pattern.

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National Park Service photograph

Figure 12. A drilled and ground slate artifact, perhaps a pendant. Length is 1.9 in (4.7 cm).

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